



Homeland
Security

Motivation and Intent (M&I)

TVTA Program

Department of Homeland Security

*TVTA Offsite Meeting
Wednesday, April 20-22, 2005
NNSA-NVSO, Las Vegas, NV*

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PNNL

Mission

- ▶ Help analysts account for socio-behavioral factors in assessing risk from terrorist threats
 - Support the analysis of competing M&I hypotheses through modeling and simulation of observed and plausible behaviors of intelligence targets
 - Aid the development of more effective counter-measures by gaining insights about their potential impact



Vision

- ▶ Establish a socio-behavioral science roadmap that adds enduring value to Terrorism Analytics
 - Meets the real-world needs of intelligence analysts in evaluating motivation and intent
 - Evolves over time to identify new technologies and capabilities
 - Provides an analytical platform that improves the predictive power of TVTA deployments

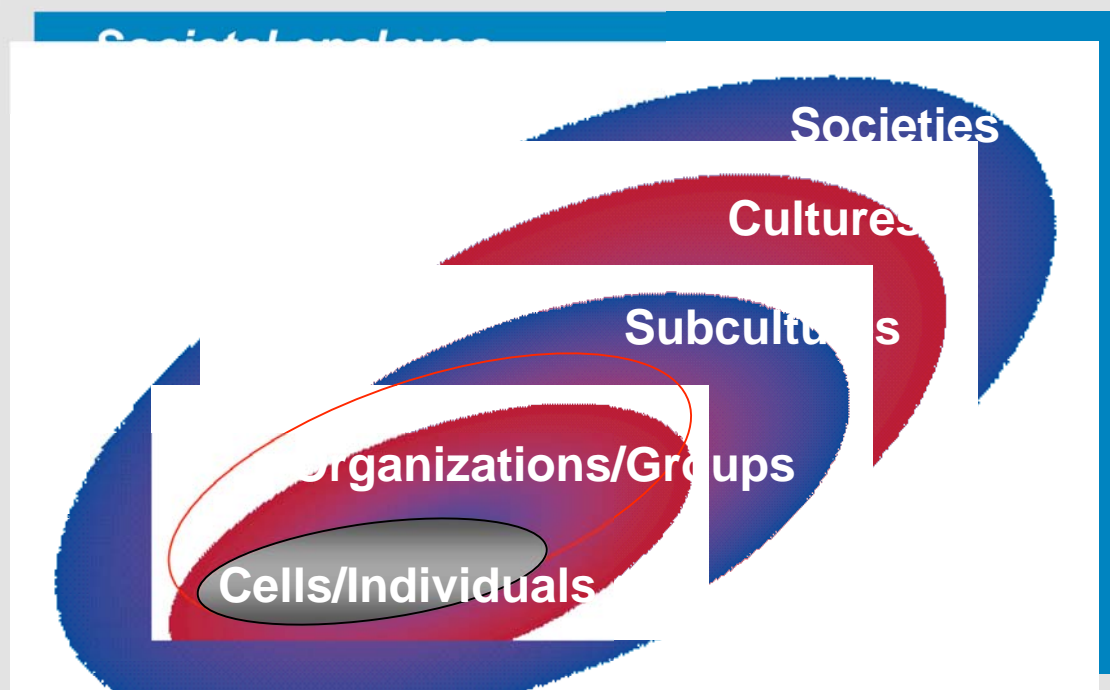


TEAM

- **LLNL: John Woodworth**
- **LANL: Ed MacKerrow**
- **ORNL: Joe Trien**
- **SNL: Rick Contreras**
- **PNNL: Antonio Sanfilippo**



Create an Analytical Framework that Explains Motivation and Intent of Terrorist Entities across all Levels of Society



Motivation and Intent factors

***Unsatisfied needs and ideology
Needs that are Ideologically antithetical to US***

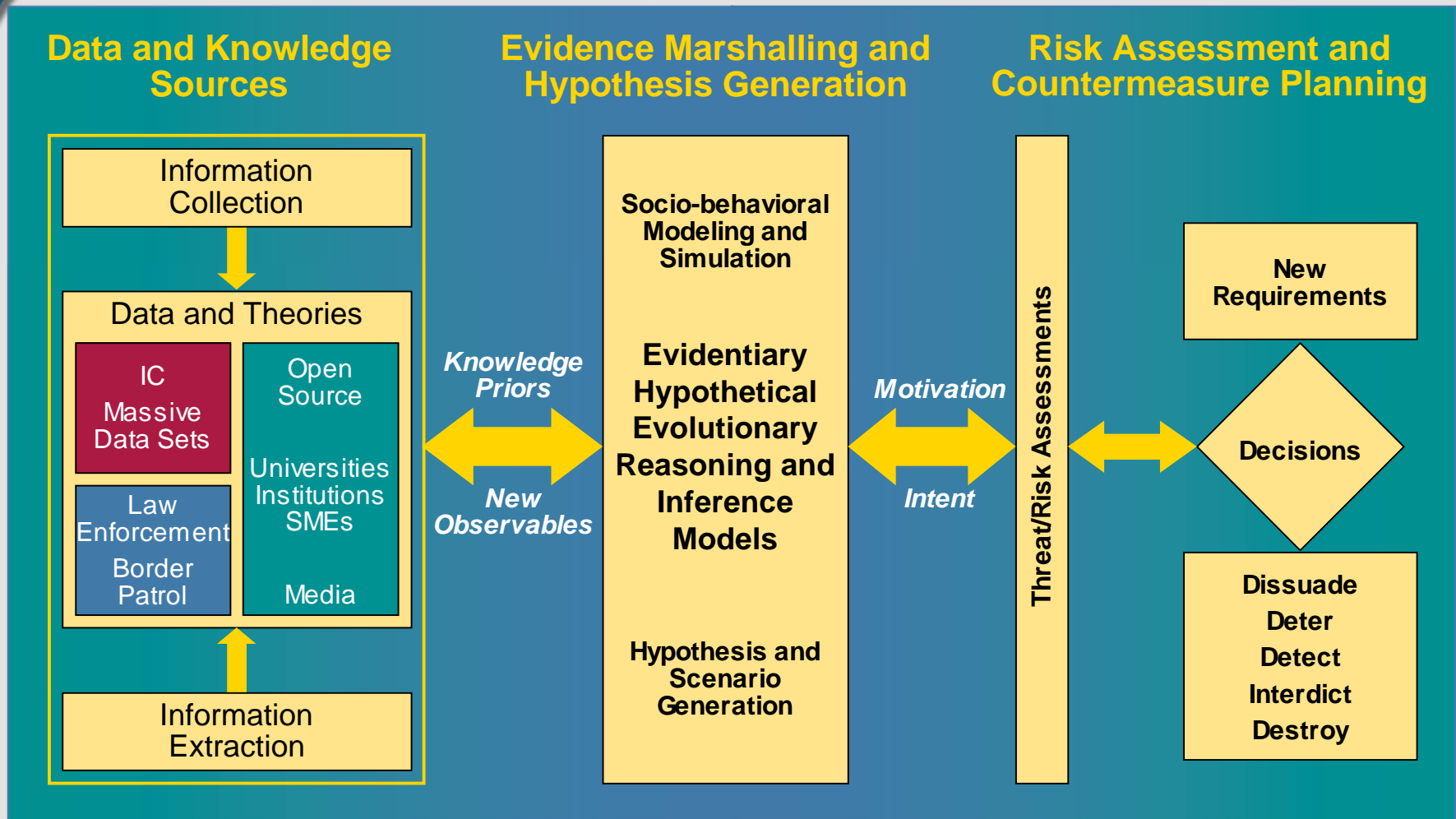
Desire to impact negatively on the US to assert own values

Preparing attacks intended to increase group influence

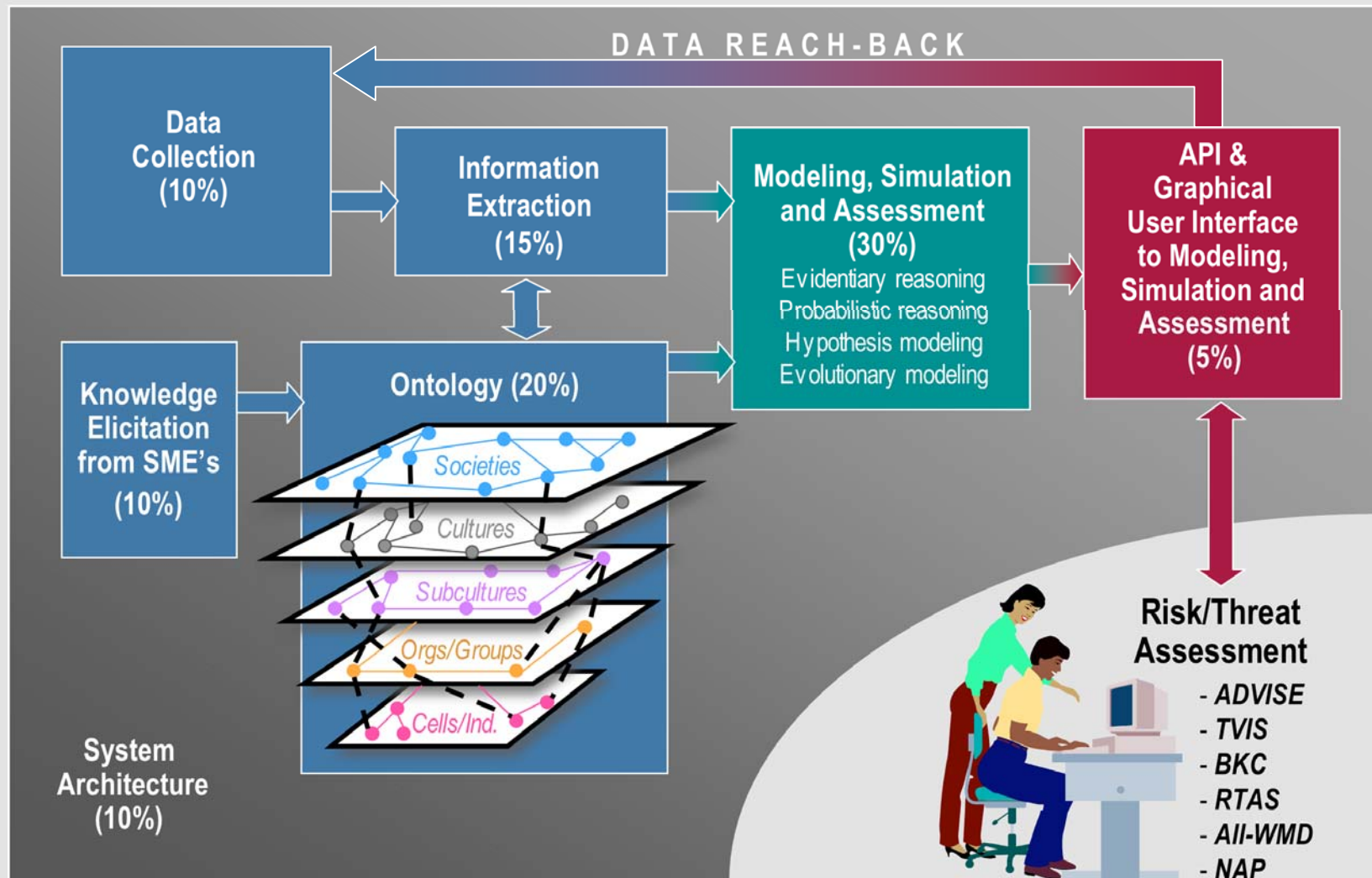
Readiness to attack in order to fulfill personal goals



Workflow and Resource Integration

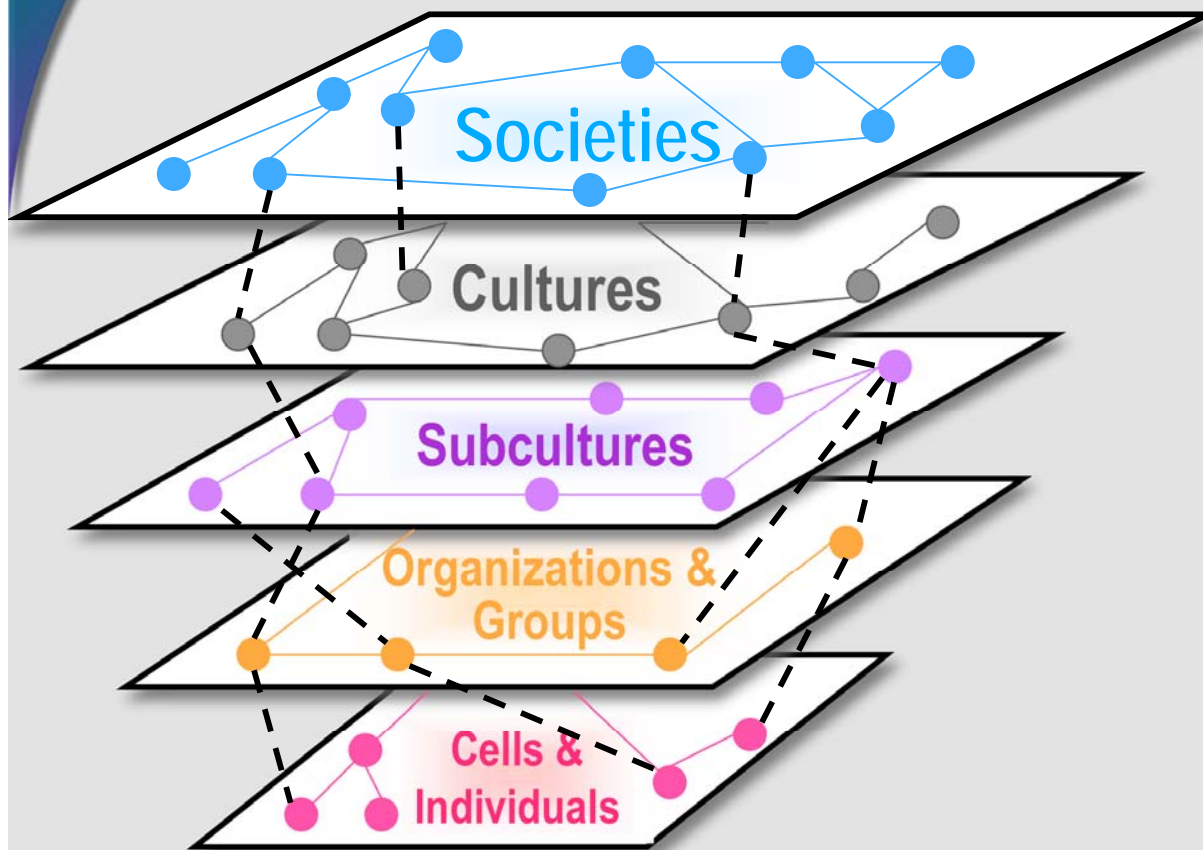


Motivation and Intent Platform



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Work with Subject Matter Experts to Formalize M&I Knowledge

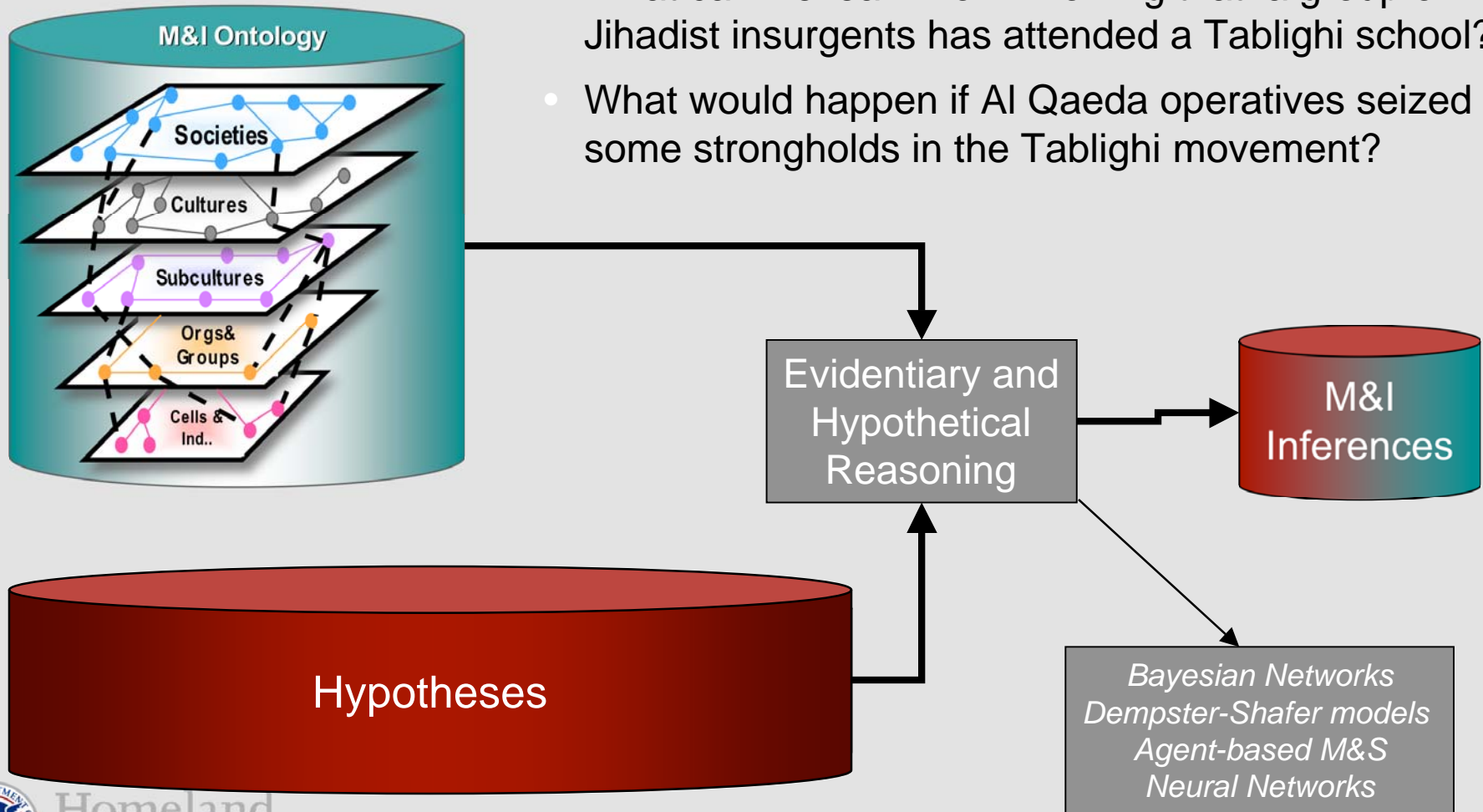


- ▶ Build an ADVISE-compliant ontology
- ▶ Specify geo-political, historical, ideological, religious aspects of terrorist entities at distinct levels of social description
- ▶ Captures relevant relationships at each level of social description
- ▶ Establish significant links across societal enclaves



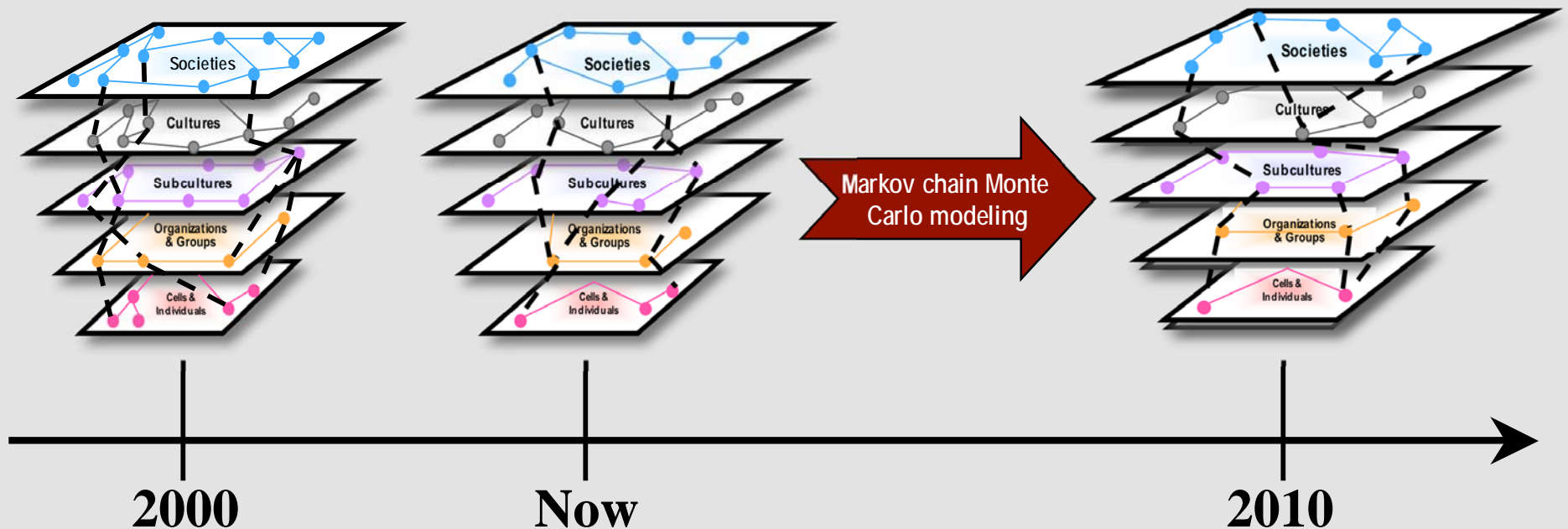
Ontologically-driven Probabilistic Reasoning

- What can we learn from knowing that a group of Jihadist insurgents has attended a Tablighi school?
- What would happen if Al Qaeda operatives seized some strongholds in the Tablighi movement?



Develop Evolutionary Reasoning Models

- What will the Tablighi movement look like in 2010?
 - Philosophy, alliances, growth, etc.



Cooperation with Other TVTA Thrusts

▶ **ASC**

- Modeling and Simulation methods

▶ **ADVISE**

- Ontological development
- Information extraction
- Architecture

▶ **NVAC**

- Visualization
- Visual analytics
- Architecture

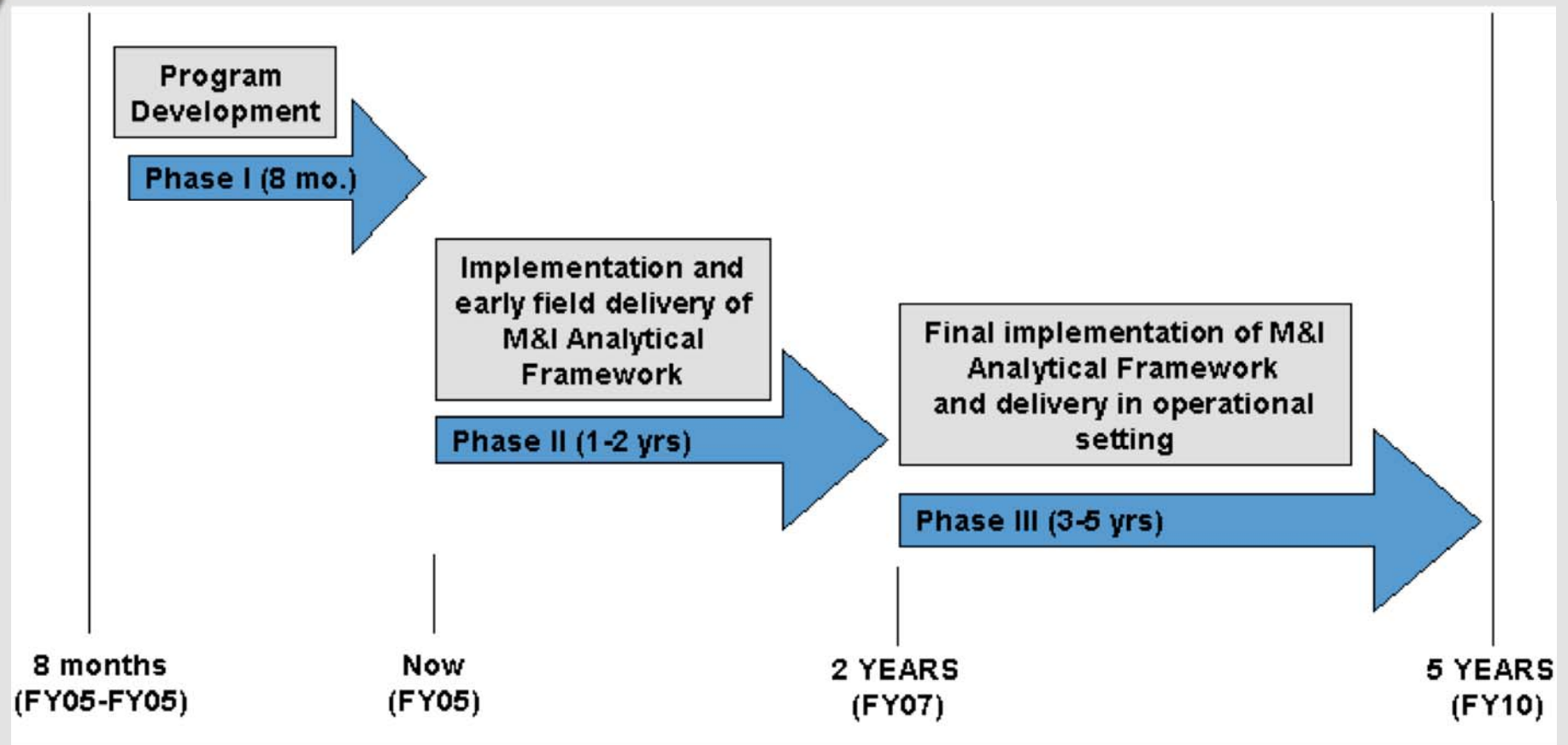


Objectives & Deliverables

- ▶ **1. User Requirements Development**
 - User requirements documentation
 - Establish collaboration with subject matter experts
- ▶ **2. M&I Platform Development**
 - Develop and evaluate prototype capabilities on user-defined focus problems and data sets
- ▶ **3. M&I Operational Capability Integration**
 - Capture domain knowledge
 - Thrust area integration (joint development with other TVTA thrusts)
 - Reach-back capability to SMEs in social-behavioral sciences
 - Deliver operational M&I capability (2006 and onward)
- ▶ **4. Technical review and Spiral Development**
 - Technology Roadmap (capabilities, integration, review and deployment)



Roadmap



Thank you!



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Motivation & Intent Assessments

- ▶ Use socio-behavioral modeling and simulation to gain insight about the root causes of terrorism
- ▶ Assess the operational risks of terrorist organizations based upon their motivational drivers and objectives
- ▶ Capture behavioral cues and contexts that provide warning indicators of potential terrorist activities
- ▶ Characterize the conditions under which a terrorist group would change its motivations to target the USA

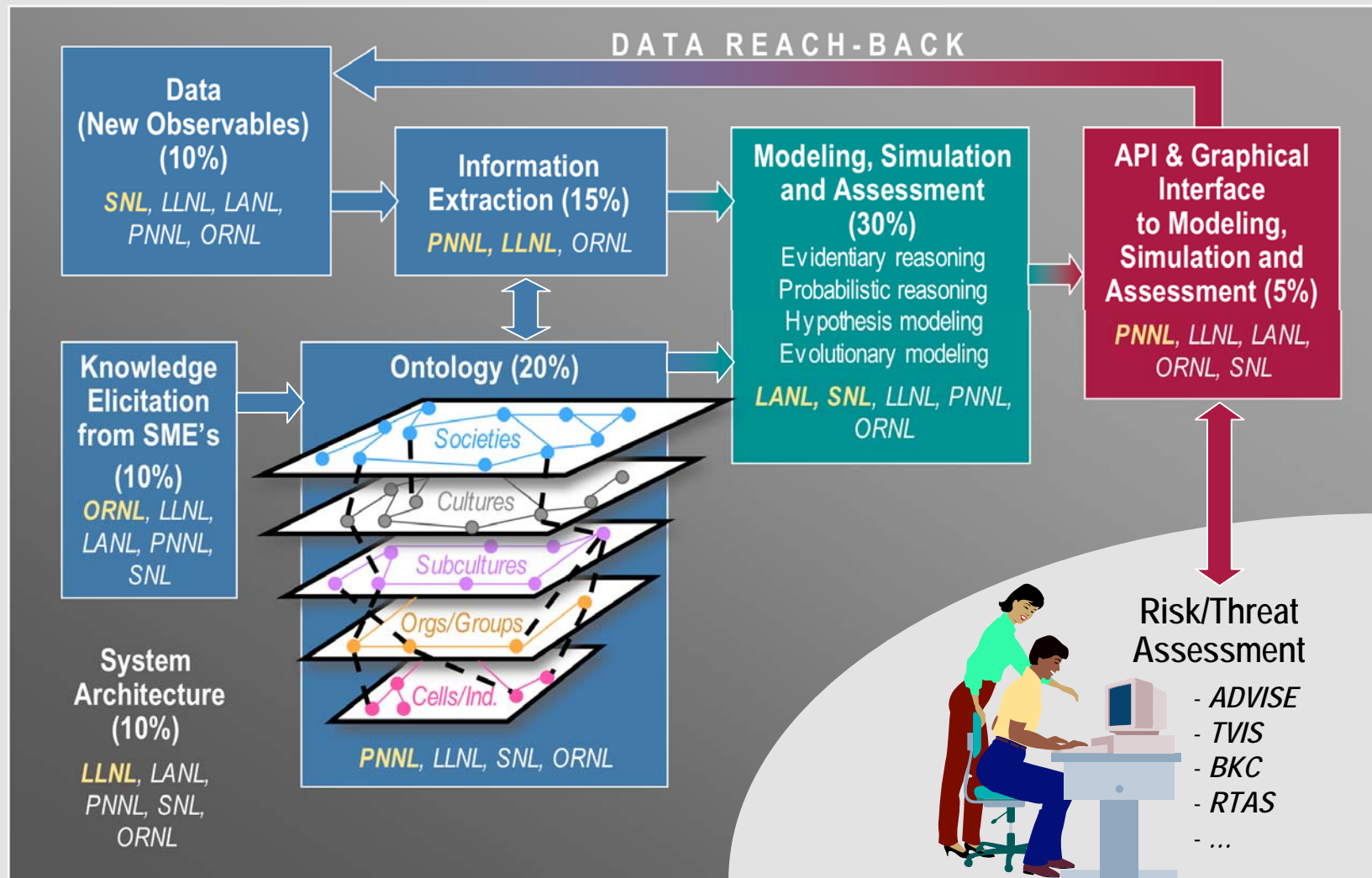


Motivation & Intent Assessments

- ▶ Understand how leaders emerge and attract a following
- ▶ Analyze inter-cultural dynamics to forecast the ability of terrorists groups to
 - embed themselves into to legitimate communities
 - establish symbiotic links with other terrorist/criminal groups
- ▶ Track patterns of conflict, dominance and subjugation within terrorist organizations
- ▶ Simulate countermeasure scenarios to gain insights about their potential effectiveness



M&I Platform



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User Requirements Development

► Establish a Focus problem with input from analysts

What are the motivations and intentions of terrorist groups in acquiring and deploying weapons of mass effect against the United States homeland and its foreign interests?

How do analysts infer M&I about terrorist groups?

► User Workshop

- **Aim:** Elicit analysts' needs for M&I analysis in support of threat assessment, with reference to the focus problem
- **Participants:** Analysts, counter terrorism specialists, selected technology developers, M&I team members



Five Use Cases

- ▶ Understand the decision-making processes of terrorist groups
- ▶ Assess motivation and intent of terrorist groups based on history
- ▶ Determine the objectives of specific terrorist groups
- ▶ Use socio-behavioral analysis to estimate motivation and intent and evolution of terrorist groups
- ▶ Understand societal and media influences on the motivations and intentions of terrorist groups

